

Control System Combats Fighter Aircraft Tail Vibration

Company:

Active Control
eXperts (ACX), Inc.

Location:

Cambridge, MA

Employees:

60

President:

Kenneth B. Lazarus,
Ph.D.

Project Officer:

Doug Henderson
AFRL Air Vehicles
Directorate,
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SBIR Technology

Air Force fighter aircraft, flying at high speeds and high angles of attack, experience extremely turbulent air flow from the leading edge of the wings.

This causes severe buffeting vibrations on fighter aircraft with twin tails like the Air Force's new F-22 Raptor.

This vibration increases the fatigue of critical structural members, requiring frequent inspections, reducing the aircraft's time on the flight line, and shortening the useful life of the tail assembly. ACX developed a piezoelectric active control system to combat the buffet problem. Closed loop testing of ACX's technology demonstrated a greater than 50 percent reduction in root mean squared (RMS) stress at the root of the aircraft tail structure, while meeting stringent weight and balance requirements.

For more information
on this story, contact
Air Force TechConnect
at 1-800-203-6451 or
at [www.afrl.af.mil/
techconn/index.htm](http://www.afrl.af.mil/techconn/index.htm)

Company Impact

Previous SBIR awards played a key role in developing ACX's technical capabilities and form the foundation of the firm's product development strategy. ACX partnered early-on in SBIR research projects with companies anxious to apply the technology to commercial applications. SBIR research helped ACX design a vibration damper system for K2 Corporation's skis.

Popular Science magazine named this innovation "Best of What's New" and *Snow Country Magazine* named it "Innovation of the Year." ACX also developed a vibration damper system for K2 snowboards. This technology won a "R&D 100" award from *R&D Magazine*. ACX leveraged its great success into other sports markets, introducing piezo dampers for baseball bats (with Worth, Inc.), waterskis (with O'Brien International) and bicycles (with K2).

Company Quote

"ACX owes much of its success to the SBIR program. The technical success of our government programs, the market acceptance of our products, and our recent designation as Massachusetts SBIR 1998 'Business of the Year' demonstrate that SBIRs have significant value for the government and for the commercial sector."

SBIR

AF SBIR Program Manager
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